DOCUMENT RESUME

ED 219 297 SO 014 040

AUTHOR Burger, Henry G.
TITLE "Mesogeny" (Milieu-Mediated Maturation) Versus Endogeny: A Crucial Underemphasis in Piaget's "Internally-Caused" Phases.
PUB DATE 82
NOTE 40p.; For related document, see SO 014 041.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Adolescent Development; *Child Development; Cultural Influences; *Developmental Stages; Environmental Influences; *Epistemology; *Intellectual Development
IDENTIFIERS Piaget (Jean); Piagetian Stages; *Piagetian Theory

ABSTRACT

The author credits Piaget for giving an operational definition of deduction and for his descriptions of child behavior. But he states that the latter apply only to white, middle-class urban youths in Switzerland in the first half of the 20th century and cannot support Piaget's claims about invariant stages of intellectual development for all youths in all cultures. The author characterizes Piaget's 50 books and 160 articles as overlapping and contradictory, still obscure despite a vast flood of supportive literature by others. Piaget's theory of development is described as static, unscientific, and internally inconsistent, comparable to the medieval theory of phlogiston. While Burger states that the theory is mainly definitional and therefore mostly untestable, he alludes to 29 propositions derived from Piaget which have been contradicted by 150 field reports from over three dozen cultures. He attributes the continuing popularity of Piaget's theory to the current fascination with childhood and science and to an intellectual vacuum that exists for explaining learning. The alternative to Piaget proposed but not elaborated is a cultural theory of learning that admits a wide diversity in patterns or sequences of intellectual development in different cultures. This is variously referred to as cultural anthropology, cognitive anthropology, and mesogeny, the latter a coined term indicating a relationship between biological inheritance and environment, between nature and nurture, that resembles Darwinian evolution. (IM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED219297

"MESOGENY" (MILIEU-MEDIATED MATURATION) VERSUS ENDOGENY:

A CRUCIAL UNDEREMPHASIS

IN PIAGET'S "INTERNALLY-CAUSED" PHASES

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Henry G. Burger

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

by Henry G. Burger (Ph. D., Anthropology)

Professor of Anthropology, Prof. of Educ.

University of Missouri - Kansas City

Kansas City, MO 64110-2499, U. S. A.

SP 014 040

*Manuscript copyright © 1982 Henry G. Burger.**

** Address always appears in New York City telephone directory.*

BURGER, HENRY G. (Professor of Anthropology, Prof. of Educ., University of Missouri-Kansas City, U.S.A.,

"MESOGENY" (MILIEU-MEDIATED MATURATION) VERSUS ENDOGENY: A CRUCIAL UNDEREMPHASIS IN PIAGET'S "INTERNALLY-CAUSED" PHASES

POSSIBLE INDEXING WORDS, in decreasing importance:
Piaget, Jean. Cognition. Maturation. "Mesogeny" (environmentally -mediated maturation). Cultural materialism.

SUMMARY

Jean Piaget has argued the global uniformity of childhood maturational phases and skill-ages. But analysis of such of his terms as "equilibration" reveals his genetic epistemology to be humanism rather than science; he has discovered the dictionary, not adolescence. Emphasizing statics, the Swiss scheme neglects process and thus causality; it precludes falsifiability and positivistic science. Among the few Piagetian items even stretchable to test is the concept that topological ideas precede projective ones, and projectives precede spatial; but real life proves the opposite being practiced. Similarly fragile are entire Piagetian paradigms: Henry Maier, for example, derives a 10-point Piagetian system, including the knowledge-sequence of use, then permanency, symbol, site, etc.; but when we apply it to perception of the Moon, it immediately collapses. And so Piagetism persists through its very obscurity; but must now be challenged by the need to develop educational anthropology. - We can identify alternative theoretical possibilities via a maturational-variables matrix. Two major factors seem to be the adolescent triggering site (internal or interplay?) and the course variables (unitary or multiple?). Piagetism offers the combination of "internal/multiple," making maturation like a multistage rocket that once fired is unilinearly triggered by the mere attainment of

strata. The even more simplistic "internal/single" combination constitutes endogeny, resembling a cannonball's trajectory. But "external/single" factors constitute exogeny, as in the constant veering of a sailboat. And "external/multiple" combination means the impingement of the genes upon environmental (and increasingly cultural) structures, with their diverse reboundings -- the interplay between possibilities and opportunities. This important concept finds no ready name, so we propose that such a nature-via-nurture course receive the name of "mesogeny," from the roots meaning "development between." It involves an emergent pathway that interacts with such local environment as appears as it attains each bodily skill, -- the essence of Darwinism applied to ontogeny.

- Organic evolution is the ever better adaptation to survival in one's energy-harnessing niche. An organism that is permitted slow yet protected maturation (LaBarre's "infantilization") can retain greater flexibility from instinctiveness (LaBarre's "fetalization"). Thereafter, constantly revised local (zeitgeist) feedbacks can enable closer adaptation and energy-harnessing than instinct. -

This analysis befits the emergent anthropological school of "cultural materialism," which argues that the idea systems, whether of children or of adults, obey the local social organization and ultimately the local techno-environment. For anthropology finds essentially that behavior is proportioned to particular combinations of local time-and-place, the contrary of Piaget's globalism. Indeed, the Swiss empiricism would pidginize science to individual youths, when we should first consider the independent variables like culture and only secondarily the dependent variables like particular groups of children. Youth learns less from the 'dawning' of genes than from the 'donning' of jeans. - The forthcoming battle will go even beyond and challenge the present ego-science learning sequence, which assumes that the individual is the study target, with culture merely an aggregation of individuals. - 1 figure, 59 references cited.

"MESOGENY" (MILIEU-MEDIATED MATURATION) VERSUS ENDOGENY:

A CRUCIAL UNDEREMPHASIS IN PIAGET'S "INTERNALLY-CAUSED" PHASES

	Page
I. THE UNVERIFIABILITY OF PIAGETISM	1
Piagetism as a paradox in cultural science	
Exemptions from the present critique	
The scope of the present challenge	
The untestableness of Piagetian specifics	
The untestableness of Piagetian paradigms	
II. REDRESSING PIAGETISM WITH MESOGENY (=NATURE/NURTURE INTERPLAY)	11
Epistemology as humanism not science	
Alternatives in conceptualizing maturation	
Mesogeny (nature/nurture interplay) as a Darwinian mechanism	
III. THE NEED TO PRIORITIZE CULTURE IN BEHAVIORAL SCIENCE	20
Why Piagetism persists	
Empiricism as a delayer of theory	
Individualistic versus social sciences, the forthcoming battle	
Relegating Piagetism from ethnology to ethnography	
- - - - - - - - - -	
References cited	29
Figure 1, Principal conceptual schemes of adolescent development	35

I. THE UNVERIFIABILITY OF PIAGETISM

Piagetism as a Paradox in Cultural Science

"Jean Piaget's theory of the development and structure of the intelligence unquestionably represents the greatest intellectual achievement of any living behavioral scientist." Thus began a recent, leading review article of a leading behavioral-science journal (Turner 1973:351).

But this common belief must be challenged by the present author, a cognitive anthropologist. A systematic and theoretical analysis of the Swiss scheme is long overdue from a cultural standpoint. We should not seek merely another particularistic argument such as, 'By how many months do the members of the Baloni tribe learn weight before volume, in contradiction to Piaget's scheme?'!

Rather, the system is to be challenged on several broad fronts. First, it is argued that many of the Genevan's "discoveries" rest on mere definition rather than on the clinical reports that he prologued and which ostensibly justified them.

Yet an alternative position is possible on his "genetic epistemology." It would argue that Piaget offered more than mere stage definitions. He made specific, testable claims, such as of world-wide maturational sequences and specific skill ages. These should be critiqued by the cultural science, anthropology.

Lastly, there is the problem of interpreting the various findings. We must argue that Piaget's pan-culturalism misfits the scientific trend to proportion behavior to particular combinations of time-and-place (of zeitgeist). But his seconding of the ethnic-specific in favor of the individual is only one of the several possible theory-sets whereby maturation may be interpreted.

Each of these three approaches requires lengthy demonstration and/or documentation. But journals have editorial limitations and readership specialization. These facts behoove the separation of the multipart analysis. The first approach is discussed elsewhere in our "definitional argument" (Burger 1977a): Suppose, for example, that we

define skill n as appearing in Phase One. Then by definition, not truly by experiment or discovery, skill n + a cannot emerge before that time.

The second challenge, refuting specific skill appearances, requires a vast citation of case-studies. We provide just that elsewhere, by making transitive the quite involuted and intransitive Piagetian skill stages. They produce some 2-1/2 dozen propositions. And for virtually each of which we are able to offer significant (and usually Third -World) disconfirmations. Thus, Piaget's claim 19, by our numbering, was that only in the concrete-operations phase (i. e., after age 7-1/2), can a child learn the reversibility of materials which must precede the learning of social reciprocity and of kinship; "the reaction of intelligence at this level to the social environment is exactly parallel to its reaction to the physical environment. . . ." (Piaget 1947:1950:160). "To the age of about 7 - 8 years, . . . the child is, therefore, not subject to a socialization of intelligence. . . ." (op. cit.:162). Yet detailed ethnography (Raum 1940:169-78) shows that among the Chaga (Chagga) of East Africa, an eighteen-month-old would be speaking sympathy that was linguistically inflected to a victim's sex, and helloes inflected to a visitor's origin. And by 28 months, that Bantu speaker was titling his mother by that one of her four roles which was most appropriate to his present discussion (ibid.). Our point-by-point disconfirmation (Burger ms. a), citing almost four dozen cultures and almost 150 reports, will here be cited as our "ethnographic confutation."

So many are the specifics that fill each of those two refutations, however, that a synthesis is needed. And just such an interpretation of the findings constitutes the present article. (Since some readers may lack access to the two other articles, the present author is willing to send them on request.)

Exemptions from the Present Critique

The specifics challenging Piagetism appear in our other two manuscripts, whereas the present article attempts an interpretation of the significance of the different interpretations. Yet, in making these distinctions, we owe it to that pioneer to exempt many of his approaches

from this contrast.

First, the Genevan has shown that intellection is part of the evolving genotype of Homo sapiens -- producing what the ethologist Hans Kummer would call phylogenetic adaptation (1971:12-13). Even in this day, when behaviorists seek to commingle Homo sapiens with the alloprimates, Piagetism subtly but constantly invokes "humanism."

Secondly, the Helvetian's specific mental-process claims have stimulated vast clinical work (as by the master himself) and fieldwork (as by Jerome Bruner's followers). These activities antidote the pre-Piagetian dominance of "verandah"-type philosophizing about "juvenile nature."

Also, the Swiss epistemologist has minuted a probably very accurate "mental ethnography" of white, middle-class, urban youths in one commercial European culture in the first half of the 20th century. Such sensitive reportage is indeed a worthy accomplishment.

Furthermore, he has provided an operational definition of "the" intellectual function, deduction, which is no small task. He has specified its major (four to six) talents. Although we reject his universal time schedules and even the phasing of them, we nevertheless accept each specific emergence as an intellectual accomplishment (Burger 1977a).

Again, the Swiss has deservedly earned accolades for justifying the study of what was once deprecated as "childish" behavior. He has emphasized that a youngster is not a "failed" adult, but an animal whose development somewhat recapitulates evolution. Thereby he has detailed what laymen have long sensed, as when in the first century A.D., Saint Paul noted in 1 Corinthians 13:11, "When I was a child, I spoke like a child, I thought like a child. . . ." In this way, Piaget goaded many, including the present author, to deliberate the nature of human learning.

The foregoing important contributions are, then, exempted from the critique that consitutes this article.

The Scope of the Present Challenge

Granting the foregoing exceptions, our current subject is Piaget's having selected for maturation an inconsistent and thus inapplicable model. His scheme may most clearly be theorized as claiming that adolescent

destination is controlled internally (e.g., genetically). Yet he implied that the factors which energize childhood are multiple. This doctrinal combination produces the sort of scheme that won the Aristotelian term of entelechy. The dictionary now defines it as ". . . a suppositous immanent but immaterial agency held by some vitalists to regulate or direct the vital processes of an organism esp. toward the achievement of maturity. . . ." (Merriam 1961:1967). Literally entelechy meant, "to be complete," implying 'set from the instant of birth.' Today that coursing might be analogized to a multi-stage rocket whose next phase ignites automatically on reaching a predetermined altitude.

Such entelechy engrosses instinctivism. Thus there is but a short distance from what the Swiss terms his "genetic epistemology" to the genes, which are of course fixed biological units. Altogether, such advocates of "the idea of spontaneous mental development . . . [believe in] 'biogeneticism,'" according to the Soviet critic Petrovsky (1972:1973:96), whose discussion clearly targeted Piagetism. (That the Genevan occasionally explains away diversity by invoking a last-minute sort of interplay, we elsewhere critique (Burger ms. a) as a mere maneuver. This article's multiple references to this common ideological group will, purely for elegant variation, alternate such names as Piagetism, the Genevan system, the Swiss approach, entelechy, genetic epistemology, and biogeneticism.

Jean Piaget was trained in zoology (Gardner 1972:1974:52-54). He did not specialize in symboling, or even primates, or even mammals, but in molluscs -- the phylum including snails, etc. (Ginsburg and Opper 1969:3). His learning of sapiens characteristics seems to have been on-the-job rather than systematically academic.

Our dispute concerns the youthful phases of intellectual maturation. Piagetism essentially argues that they are uniform globally. But cultural anthropology emphasizes the ethnic-specificity of virtually everything that is symbol-derived (Burger 1977a), a definition certainly including human childhood. (Such ethnic specificity does not obviate inter-ethnic comparability: We do not claim an absoluteness for each society's youthhood.)

The question therefore holds great implication for the ultimate social-science problem of the individual versus society. It affects the interfaces of at least four of (North American) anthropology's five divisions: Bioanthropology or physical anthropology is involved because of the interplay between body and maturing brain. Ethnolinguistics concerns the crucial role of language in intellection and cognition. Ethnology should challenge Piagetism's separation of enculturation from ethnicity. And applied anthropology ought to defy the Swiss scheme's doubting the directability of "accelerated" instruction. Therefore the issue must be braved if the emergent subdiscipline of educational anthropology is to transcend its a-theoretical heritage of a mere collection of bizarre stories about outback youngsters. Yet both it and its parent discipline have been As Hallpike noted (1976:254) in a rather inconclusive article, "what is so striking . . . about [Jack] Goody's and other anthropologists' writings on the impact of literacy . . . is the utter lack of any reference to the work of [Piaget and other] cross-cultural developmental psychologists. . . ." And so our goal is contrasting Piaget's basic orientation with that of anthropology. Particularly do we cast the challenge in that anthropological viewpoint which Marvin Harris has termed "cultural materialism," under which ideology (sc. childhood ideation) is claimed to obey the local "techno-environment" rather than being globally uniform (Burger 1974b). The present article therefore seeks not so much to disprove Piagetism outright, as to emphasize a major variable hidden within it, thus producing an actually quite alternative interpretation of the same phenomena. This is not an exercise in agonistics, but in re-cognition.

From such a scope follows our present plan. Rather than repeat the many dozens of cases that misfit Piagetism and appear in our "definitional argument" and "ethnographic confutation," we begin by showing the unproductiveness of trying to apply Piaget's scheme to a real-life situation or two. We interpret this non-replicability as inherent in genetic epistemology's humanism, which misfits the positivistic nature of science. A maturational-variables matrix instead reveals Piagetism to be but one of the simpler of four major

possibilities. Yet only the most complex of them, the interplay of nature and nurture, can fit the Darwinian scheme of ecological adaptation. Piagetian empiricism is thus shown to fail nature's grander materialistic scheme. It pidginizes science to individual youths, when we should first be considering the independent variables like culture and only then working toward their dependent variables like particular groups of children.

The Untestableness of Piagetian Specifics

The parts of Piagetism that seem "natural" are, in fact, mere truisms, as shown in the logical diagramming of our "definitional argument." And Piaget's 29-odd hypothetical subphases constitute patchwork that lacks both internal consistency and hologeistic confirmation, as shown in our "ethnographic confutation."

Since his approach is inconsistent, we should expect it to become inapplicable or trivial when tried as applied science. Let us examine, for example, one of the rather few specifics whereby we might test innativism against a redirectable school situation: a learning sequence for geometric types. "Piaget has made the intriguing discovery that in some respects the evolution of scientific thought has followed the evolution of thought in the child," reported Gardner proudly (1972 : 1974:236). And Sigel explained in Oxford's Piaget Festschrift, "Piaget has indicated that topological intuitions precede projective ones, and that these in turn precede metric concepts. . . . [But in actual Angloamerican practice,] students begin with Euclidean geometry, and only later, if ever, proceed to topological mathematics. . . ," confessed Sigel (1969:485). Immediately, however, he rushed to avert a test showdown: "Does this mean that current practices . . . are wrong? . . . [Not necessarily according to biogenetics, because] Euclidean geometry is frequently taught . . . when the students are 14 to 15, and have attained, in most instances, formal operational thought. By this age, topological qualities are already assimilated and appropriate schemata evolved. If [, however,] we were interested in teaching Euclidean

geometry to children at the [earlier Piagetian era of objectified, i. e.,] concrete operational stage, then it would behoove us to be concerned with the [re-]sequencing of instructions. . . ." In other words, when Sigel attempted to operationalize Piagetism, he had to argue that it wouldn't change things. Echoed Gardner sadly after declaiming Piaget's "intriguing discovery" supra: "On the other hand, . . . not always [is Piaget's learning sequence to be applied] . . . , for example, the young child begins with a topological view of spatial ordering, next moves on to a projective view, and only at adolescence comprehends Euclidean space. Historically, however, the [ancient] Greeks constructed Euclidean geometry, projective geometry was a product of the 19th century, while topological geometry is only a development of recent decades" (1972; 1974:236). Once again, then, a whiff of reality disperses biogeneticism.

Even then, these true believers did not perceive that the basic cause of their test failure: The synaptic maturation has (beyond the very

Even then, these true believers did not perceive the basic earliest weeks of birth, of course) almost nothing to do with our understanding youthful interpretation. Geometry is not an exception to Piagetism, but a typical illustration of nature's anti-Piagetism. The image of children freely pressing outward belies the cultural -materialistic reality that the culture instead presses ever inward and ever harder upon them. Geometric learning obeys such societal matters as real life's consisting in three dimensions. (Even a sheet of paper has thickness.) Hence the growing youth must be taught from practicality to abstraction. Many apprentice carpenters in our large construction industries in a similar way probably need Euclidean parallels and angles daily. And so their masters have found ways, albeit informal, to teach those allegedly unteachable matters to the intrigued youths.

Indeed, we elsewhere find a documentation of just such curricular simplification that disproves a Piagetian genetically fixed calendar: Ogilvy observed (1959-60:2) that the increasing Angloamerican need for plane and solid geometries has in the past single century crammed its presentation level down from college sophomore to high schooler. Surely

the brain isn't evolving so quickly! But the culture and the using vocations are. And so the individual need not recapitulate this culture, the Occidental ecumene. The course of each ethno-science obeys particular economic pressures acting on whatever accumulation of knowledge is available. Euclid's contribution would be useful -- for, say, bounding farms. But the currently wider travel importantly requires topography, as for aerial mapping (cf. Hessen 1931). And so even this rarely testable Piagetian claim, a global sequence for learning geometry, flunks reality.

The Untestableness of Piagetian Paradigms

Nor are such isolable claims the only sites of unverifiability in the biogenetic scheme. For the superficiality of modern "educationism" has caused several of its practitioners desperately, to attempt its synthesis in a theory-set, or paradigm, of Applied Piagetism.

Consider, for example, the 10 "basic trends . . . recognized [by Piaget]" according to Henry Maier (1965:141-43). He drew them by recapitulating several Piagetian propositions. Number Two, for example, that "all developmental phenomena reflect a natural trend of change from the simple to an ever-increasing complexity." Bravo. Unfortunately, the dictionary (Merriam 1961:1967) already defines development as "the whole process of growth and differentiation. . . ," and differentiation as "development from . . . the simple to the complex . . . ." So again we find no way of testing alleged Piagetian discovery.

Or consider the seventh 'contribution' that Maier found in the Swiss scheme. It declares that "an object is first known for its use, then for its permanency, its representative symbol, its place in space, its properties (weight, etc.) and finally for its relativity in space, time, and utility."

Contrary to such 'practicalized Piagetism,' however, every object cannot be globally sequenced. Permanency before spatial place, for example: Does not popular astronomy teach the Moon's nearness before

its durability?! And representative symbol before relative utility: Christianity may indeed inculcate the Cross's image before its potential power. - Weight before utility: A lower-middle-class engineering institute may be interesting its students in the element lead by emphasizing its ductility rather than its extreme heaviness. And so on. When we apply any sort of cross-sectarian or cross-cultural imagination to the Piagetian rigidity, then, these axioms also topple.

We need not spend space to demolish the remaining eight "trends" similarly. Thus a Piaget-derived paradigm does not survive even within a single culture in even the present decade -- let alone in an imaginarily eternal universe!

Equally flatulent is a theory-set from the master himself: "These [summarized] data seem to show that there is some sequential order of the stages which depends partially on the [biological] factors [type] 1. But, the ages for each stage are not constant, showing the factors 2 [= actions of individuals as interacting with their physical environment] and 3 ["general socialization factors, which are identical for all societies"] are intervening in a probably inseparable way. . . ." In other words, Piaget could specify virtually no stable theory. And as for educational and cultural values, he continued (1966:4), "the general operations depend less on school than . . . on the adult stimulations in the environment. . . ." About all that remains of his central "decalage" argument is, then, that society doesn't teach everything at once, hence serializes its curriculum. Now, there are tens of thousands of words in any society's curriculum, and the human mouth can pronounce only one at a time. Therefore a paradigm that merely denies simultaneity of all learning represents the depth of triteness.

Neither this nor other biogenetic medleys rise above truism. The anthropologist must add that <u>every</u> culture normalizes its own learning priorities. This realization deprives the Genevan's "multistage rocket" of its globality both in ages and in contents, and of specification of the crucial factors. Piaget, complained Isaacs (1930:1966:73),

"offers us a highly articulated and elaborated picture of the development of the child, rather than [as Isaacs believes more correct] a series of studies of particular children under particular conditions." But it is those very specifics which have, in fact, elsewhere been found to correlate with, indeed often to cause, enculturation (cf. Burger 1975:117). Even devotee Flavell's recapitulation (1963, itself a lengthy book!) could conclude on page 446 only lamely that Piaget offered "some highly interesting state attributes and behaviors to [try to] make predictions about."

Put to trials, genetic epistemology dissolves into a merely eclectic hodgepodge. To attempt to confirm such a scheme empirically is as elusive as when librettist William S. Gilbert's Mikado humorously imagined the game of pool played "On a cloth untrue / With a twisted cue / And elliptical billiard balls."

From case after case, then, we see that despite its protestation of environmentalism, Piaget's "decalage" is pre-Darwinian, not truly instrumentalizing environmental changeability. Yet structures are meaningless (if not, indeed, nonexistent) unless we can specify the impingement diversity upon them. The Helvetian scheme does not enable prediction, the essence of science. So the Genevan's half-century search for human learning principles must be seen as having followed the wrong track: zoological unilinearity instead of anthropological diversity. Such vagueness was noted by Margaret Mead after three conference years with Piaget: "In conclusion, I should like to stress the significance of our failure, as a group, to pin down our various conceptualizations in any single set of individually identified real children" (1956:1960:IV-52). The phenomena that constitute enculturation cannot be explained via internally determined siting. Even Piaget's admirers (although not strictly his followers), the psychologists Greenfield and Bruner, came to concede as much (1966:96): "We do not really know what causes what in the whole complex of [Piagetian] features that we have ended up discussing." What a leading anthropological journal's leading article (quoted near the

beginning) termed "unquestionably . . . the greatest intellectual achievement of any living behavioral scientist" turns out, on our 29 point-by-point claim-analysis, to be theoretically elusive or simply wrong (Burger ms. a), and now practically inapplicable.

II. REDRESSING PIAGETISM WITH MESOGENY (=NATURE/NURTURE INTERPLAY)

Epistemology as Humanism Not Science

The foregoing test applications, plus the many others cited in Burger (ms. a), not only disconfirm the biogenetic system, but further make us wonder as to its place in the various typologies of possible knowledge. Yet the master's constant claim has been that genetic-epistemology's method and findings constitute science, especially human science. "Piaget," reported Elkind and Flavell in their authoritative Festschrift (1969b:xviii), "views himself as a biologically oriented genetic epistemologist first, a psychologist second, and an educator not at all." Thus, modestly describing himself in the third person, Piaget summarized (1968a:1970a:6-7, translated by H. G. B.) that "he [Piaget] tackled previously philosophical questions in a resolutely empirical manner and instituted epistemology as a science [French, science] separated from philosophy but linked with all the human sciences [sciences humaines]. . . ."

We must, however, go on to question the very scientificalness of such an enterprise. Now, science concerns the replicability of energy flows, the relation of causes to effects. But biogenetic structuralism emphasizes statics, creating a skein of implicitly mutual relationships. Thus one major "mechanism of intellectual development" was recently explained by Piaget (1968b:145) as "the progressive equilibration of actions as they become co-

ordinated." Such phrases may make good transcendentalism. But they are do not constitute science. They merely shift the fog one step ahead of the searcher. For alas, in that "equilibration" fundament also, we cannot operationalize the Helvetian. Even Battro (1966:1973:57), who catalogued Piaget's publication to quest his 'official' meanings, could find no better definition than the following Chinese puzzle, here reported complete: Operational equilibrium is something that is present when there is "the maximum of possible distances (since intelligence tries to embrace the universe) and of paths of complexity (since the deduction is capable of the greatest 'detours')." (Battro's source is Piaget [1947:1950:49 -50].) On such an involuted and contorted base, would the reader accredit even a freshman's two-page thesis? Why then should we accept it as a pillar of a half-century contrivance being quoted everywhere?! As Boyle complained (1969:146), the Helvetian has attempted "to construct an enclosed system in which all internal forces are accounted for rather than to elucidate the reaction of the system to outside forces." By neglecting specific paths of cause and effect -- of transitivity -- the decalage has placed itself beyond science.

By contrast, continued Boyle (1969:142), "science is essentially inductive. It relies on empirical evidence and cannot, therefore, be self -contained. [Yet] Piaget's system attempts to give a self-contained account of development, and it is for this reason that Piaget considers a logico-mathematical model to be appropriate. This approach has more in common with a metaphysical attempt to come to grips with 'the nature of things' than with the approach of modern science." It avoids outside variables, the very stuff of human learning.

But it is such variation that proves or disproves the factors of a hypothesis. And so a basic requirement of science is confirmability: One must "adopt falsifiability as our criterion for deciding whether or not a theoretical system belongs to empirical science" (Karl Popper 1935:1959:78). Yet Piagetism is (as in the foregoing quote) so involuted that it simply redefines to avoid confrontation.

To the grand but Popper-eluding Piagetian claims, the history of science offers many analogies. In chemistry, for instance, one was the

flammability concept that became entified as phlogiston! After vainly trying to operationalize it, Antoine Lavoisier (quoted in Downs 1961:163-64) finally assailed phlogiston as "a vague principle. . . . Sometimes the principle has weight, sometimes it has not. . . ." And Lavoisier's revolutionary oxygen theory overthrew the metaphysic, fostering modern systematic chemistry.

Today, does not phlogiston have its mental-development equivalent in entelechy? The definitional and unoperational structure of the latter resembles the rhetorical device of excusing-by-necessity that is termed dichologia (Lanham 1968:35). It is impervious to contrary data. We find it significant that, when given over seven pages in the International Encyclopedia of the Social Sciences to report the status of biogeneticism, Piaget (1968b:140-47) based his claims on 16 cited studies. It is worthwhile to scrutinize them, however. We find that one of them was a publication by his own disciple David Elkind. And all of Piaget's other 15 references cited as the authority, Piaget himself.

And so the Piagetian theory ends up without theory, a merely journalistic account of each child's individual progress. To the extent that each of these constant patchings modify the Helvetian's earlier hypotheses, should we applaud them as open-mindedness? - Unfortunately, none of these grandiose and ever more qualified "conclusions" yet propose which particular conditions (social, educational, and otherwise environmental) cause which phases to change how. We are not told by how much, or even whether or not, the changes are confined within the broad range of one decalage era. This Genevan refusal to specify vitiates his system, for journalism is not to be confused with science. As the cultural materialist Harris objected (1968: 285) in discrediting a somewhat similar eclecticism, "unless one can specify the conditions under which now religion, now art, or then again subsistence comes to the [causality] fore, . . . a generalization which applies to only one case is a contradiction in terms." A hypothesis or theory must offer the fewest terms that can explain all the variations.

Instead, not only has Piaget taken fully 50 books to specify his claim(s), but each patches up the previous ones, as if they were insufficient. This approach merely intensifies descriptivism -- the very pre-paradigmatic stage from which science-philosopher Filmer Northrop (1964) advised the cultural sciences to flee.

It is a maneuver to justify whatever findings, pro or con, one may ever make: 'My discovery is that the skill appearances obey age. But my discovery is also that the skill appearances do not obey age!' Surely the history of science will perceive this ploy as a classic of shilly-shallying.

This inherent inability of zoological theory to correlate with cultures was gently indicated to Piaget's face several times by Margaret Mead, as when she chided him (1956:1960:IV-49): "In regard to the question of 'general stages,' our present cross-cultural evidence, admittedly very fragmentary, suggests that it becomes decreasingly possible to relate different aspects of the child's behavior to its age or other measure of development, as age increases." Even the biogeneticist's summative claims that the decalage constitutes science and theory fails, then, of proof.

To cite that flimsy skein as an authority for action, is a citation toward inaction.

Alternatives in Conceptualizing Maturation

The Piagetian thicket will numb us if we overlook its place among alternatives. Let us therefore pause for an overview to contrast the several possibilities of childhood courses, even at the risk of some oversimplification. Each course constitutes a theory-set -- a "disciplinary matrix," as science-historian Thomas Kuhn would term it.

First, even time, that very basis of the Genevan's interpretation, may be conceptualized ethnic-specifically. But Piaget has been unconsciously trying to globalize a Europo-centric schedule. "Whites, mused Edward T. Hall (1976 : 1977:145), "have concrete notions

concerning books, houses, dams, office buildings, etc., all of which have scheduled times for completion, just as children are supposed to walk and talk and go to school at certain ages. [But] for the Hopi [Arizona Amerindians] every living thing has its own inherent time system. . . ." To project one's ethnocentric time system upon all cultures is, then, an error; we might term it "chrono-centrism."

And maturation contains other variables. One concerns whether the adolescence triggering site is controlled internally (e. g., genetically) or externally (e. g., environmentally). The other seems to be whether the factors in the course of childhood are believed unitary or multiple. In view of this second variable, 'internal determination' need not automatically mean a rigid trajectory, but may allow for some in-course diversity; hence our calling Piagetism internally-determined but multiply-coursed does not mean that we consider his scheme as merely rigid extrapolation.

Each of these holotypes in turn includes certain neighbors. The internally-set, single-factor scheme is endogeny. It probably also comprehends the schools termed innatism (Blount 1975:596), nativism, and geneticism -- perhaps even preformationism, homunculus theory, etc. External triggering by a single course factor, or exogeny, seems to comprise empiricism and a considerable part of behaviorism. These two variables thus offer a double-double matrix, which produces the four schemes tabulated in Figure 1.

[HERE INSERT FIGURE 1, WHICH APPEARS IN THIS MS. ON PAGE 35]

For memorability and easy reference, let us metaphorize each of the four principal schemes. First, endogeny resembles a a cannonball's rigid trajectory. Exogeny is like the constant veering of a sailboat. Entelechy may be compared, as noted earlier, to a multi-stage rocket. And the fourth combination is externally-triggered,

multiply-coursed branching. It is a step-by-step "algorithm": Only the result of one process can condition the initiation of the next. Hence one part of the variation obeys the combination of a particular time (vogue) and a particular place (culture or subculture), a combination expressed in the German and English word zeitgeist, "the trend of culture and taste characteristic of an era. . . ." (Merriam 1961:1967). That external determination impacts the multiple-factor direction. Hence the resultant, only partially predictable pathway suggests the metaphor of a patient who is progressing through an indeterminate itinerary of therapy centers, the timing and location of every one of which await the previous interaction.

For this most complex combination, let us avoid the bland term, interaction. Such merely mutual influence can apply even between two inorganics, or even to a cannonball influencing its environment. Thus Piaget once again voiced vacuity (1947; 1950:16-17) in claiming that the "point of view we shall develop" is "the interaction [n. b.] of the organism and the environment lead[ing] to the operational theory of intelligence. . . ." And, more recently, "[the child's] knowledge derives neither from objects independent of a subject nor from a subject independent of objects; it derives from an indissociable interaction . . . between organism and environment" (1968b:147). This can be merely mechanical rocketry stages, and shows no perception of a Darwinian algorithm.

The evolutionary viewpoint would suggest that adolescent destinations are influenced externally, and that the course factors may be multiple.

How shall we refer to this approach? - There are many terms in mathematics, such as Markov Chain, and in general systems, such as Waddington's (1957:32-34) homeorhesis and creode; but they do not necessarily involve organisms, which is an important enough level to deserve specific terminology. And epigenesis, 'diversifying development,' fails (as do ontogeny and phylogeny) to specify one source of the diversity as the environment. Certainly the matter falls within the concept called

Darwinism. But that oft-used term importantly also means the development of new species. By contrast, we wish to cite development of the individual of an extant species.

In sum, we must transcend the traditional dichotomy of nature -versus-nurture, so as to indicate 'nature-via-nurture.' But cognition is facilitated by clear terminology, and science advances by coining new terms to specify each new interaction that is cognized (Burger 1977b). Therefore we must hazard a coinage. Fortunately, the rules of neologism (R. Brown 1956:33-61) well fit the current problem: An inside-outside reciprocity in maturation is expressible in the Greek roots meso-, 'between,' and -geny, 'origin, development.' Hence the contrast with Piaget's entelechy is maturation viewed as interplay with the environment -- mesogeny -- pronounced with a soft g and with second-syllable emphasis.

Mesogeny (Nature/Nurture Interplay) as a Darwinian Mechanism

With this cognition-pinpointing device, we may now more easily site Piagetism. "Mesogeny" is an individual's development, or ontogeny, following the principles of evolutionism. And the latter Darwinian scheme has essentially survived a century of multidisciplinary analyses (well synthesized in Simpson 1949). The Darwinian trajectory is the interplay between genetic possibilities and specific environmental opportunities -- finely discussed by Lehrman (1953) to contrast the more innatist ethology of Konrad Lorenz. So, in a sense, "mesogeny" is the impingement of the genes upon environmental structures, and their diverse reboundings. For the higher organisms, those structures are increasingly social; for humans, they are increasingly cultural. "Mesogeny" occurs because each species or genus has evolutionarily incorporated special neural acquisition structures that process those sensations peculiarly useful to it, as expressed in such neurological ideas as "umwelt," "sensotype," etc. An example has long been hypothesized in Noam Chomsky's language-acquisition device for humans (cf. 1959:56-58).

Even if these varied and various structures were but one, however, they would not produce global uniformity. For the impingements upon them produce potentially diverse interplays, rather as a single sidewalk bounces back a tennis ball higher than it does a golf ball. Thus, even Chomsky's uniformly
-hypothesized human grammar produces concededly diverse human languages, for cultures differ in the elements they consider important. Hence one language may require the specification of the source of the information simultaneously being reported (cf. Gleason 1961:IX, XI), while an English speaker can easily report a rumor without its source.

Our "mesogenic" emphasis on environmental diversity should be considered an extension of the anthropological paradigm called "cultural materialism." That is the theory-set formulated by Marvin Harris (1968: XXII-XXIII), largely from cultural ecology. It argues that a society's environmental utilization ultimately governs its Darwinian success. Hence Harrisism views the livelihood factor as ultimately dominating the superstructure (= social organization and ideology), rather than vice versa. Elsewhere (Burger 1975) we have analyzed the cultural-materialistic alternative in detail, specifying fully 19 factors we find in it.

Now we may extend this plan to childhood learning. Organic maturation may be perceived as consisting in ever better adaptation to survival in one's energy-harnessing niche, one's lebensraum. Now, the organism could be born with virtually mature aptitudes (as is the case in simpler life-forms), in which case it could fend immediately. If, however, it might be permitted slow yet protected maturation, then the organism could as a group find its rather uniform chromosomes flexing to unpredictable and futuristic environmental possibilities. Thereby that species might develop diversely for the multitude of available lebensraums. And so it could widen its dominated range -- apparently one of evolution's "goals." Several delay-convoying systems are possible, but that of Homo sapiens is primarily social organization (cf. culture). Under it, each society foresightedly designates specific groups (parents, kibbutz specialists, etc.) to foster the immature (Burger 1977c).

The entire value of such genetic-retardation strategy would disappear, however, if maturation paths were everywhere uniform. This is true whether the paths concerned all organs or merely that human specialty, the brain's neopallium and its intellectual talents. Unfortunately, just such cosmic standardization pervades the "multi-stage rocketry" underlying Piagetism: 'Environment merely triggers actualizations from energeia to dynamis.' That philosophy is not Evolution but **Revelation**.

By contrast, the probably greatest biological finding of the past few centuries has been quite the opposite: Darwinism has shown that the organic evolution of our order, the Primates, consists in mechanisms which increasingly retard the maturation of, or "infantilize," and provide milieu feedback to, the youth (e.g., LaBarre 1954:IX). The peculiarity of that most complex species, humanity, must be interpreted likewise: The "intermodal" sapiens brain and its resultant symboling system are devices that broaden feedback both temporally and spatially (Geschwind 1970) -- through culture. The infantilization time and the nurturing society reduce the instinctiveness normally implanted even in the fetus; in a word, they "fetalize" the young human (LaBarre loc. cit.). Thereafter, diversity can occur. "Each type of social organization represents a choice, which the group imposes and perpetuates," explained Lévi-Strauss (1967: 1969:93). "In comparison with adult thought, . . . child thought is a sort of universal substratum the crystallizations of which have not yet occurred. . . ." "Mesogeny" is, then, a biological analogue of what some 'modern' schools boast as "multi-tracking." Yet each society's enculturation enables a growing child to profit somewhat from the experiences of certain other times and places without personally risking each. Hence we perceive intellection to be a species-specific "emergence," the better to adapt Homo sapiens to its ever-widening possibilities. And per cultural materialism, we interpret symboling as storing and harnessing greater quantities and types of energy over ever greater spans of time and space (cf. Burger ms. b).

Thus there is a fundamental, not a trivial, conflict between Piagetism on the one hand, and a LaBarre-sensitive trajectory of "mesogeny" on the other. One emphasizes global uniformity; the other, micro-fit. Meanwhile the continued uncritical acceptance of biogeneticism has obstructed the spread both of Darwinism and of cultural materialism, until now the confrontation can hardly be longer avoided.

By contrast, it is the cultural variable that Piaget has both neglected in his specific studies and failed to theorize in his paradigm. After half a century, as Turner himself went on to concede (1973:369), Piaget has "not yet
come to grips with the problem of the specific social and cultural mechanisms through which cultures and societies participate in and control the genetic development of the individual psyches of their members." Learning is not multi-stage rocketry but cultural interinfluence, "endogeny." The more such Piagetism is cited in learning-theory, the more the vast Third World is procrusteanized to a single European particularity. Meanwhile, improving intercultural transportation and communication make Europo-centric ethnography ever less representative of the human potential.

III. THE NEED TO PRIORITIZE CULTURE IN BEHAVIORAL SCIENCE

Why Piagetism Persists

"It is surprising," grieved Jules Henry (1971:30), "that Piaget's theory has dominated child psychology for over a quarter of a century." Its increasing patchwork has become ever more arcane. It slithers around a critic like the legendary serpents entangling Laocoon.

Piagetism stays afloat, then, not for its own seaworthiness but because of the surrounding vacuum. Its popularity is assured in that it

intertwines childhood, whose fascination to adults is essential to societal survival, with Science, which is what Jacques Barzun called the Occident's "glorious entertainment." One can oppose the humanistic product no more than one can oppose Motherhood.

A second reason for biogeneticism's survival is the increasing interest in early childhood. Any activity requires ideology and theory. However vague and cumbersome, Piaget's has been sucked into that conceptual vacuum. By now, almost any dispute in it can be silenced with the master's name. Therefore it is often not so much invoked as incanted, apostrophized, even conjured. But just such reverence has aborted the emergence of a milieu-based educational anthropology.

A related cause of entelechial survival is the imprecision of its arguments and terms, as noted in the earlier citations. The vagueness permits interpretation to either side of a question. Historically it resembles the famous double-talk of the ancient Delphic oracle. Thus, when Croesus of Lydia consulted before attacking Cyrus of Persia, that oracle cheerfully advised, "If you cross the river Halys, you will destroy a great empire." But the empire that Croesus destroyed turned out to be his own! And similarly, social-scientific studies of religion find those bibles believed in longest, whose connotations are most polysemous (e. g., 'animal' rather than 'camel') so that they can be wafted from one ecology and era to another.

Another cause of decalage tenacity is that, as Joan Robinson lamented more generally (in Dalton 1965:44), "in a subject where there is no agreed procedure for knocking out errors, [vague] doctrines have a long life." But the exposure procedure is now becoming agreed upon, thanks to Thomas Kuhn's codification of scientific revolutions. The mere amassment of disproofs, he found, annoys but does not exterminate: "Once it has achieved the status of paradigm, a scientific theory is declared invalid only if an alternate candidate is available to take its place" (Kuhn 1970:77). But an intellectual vacuum has existed for explaining learning -- a gap that has almost become synonymous with much of contemporary "educationism."

Only with some recent syntheses like Harris's Rise of Anthropological

Theory (1968) has there appeared a comprehensive frame for distinguishing the pan-cultural from the ethnic-specific. (And Harris's system has not yet been applied to education.)

A related reason may be the somewhat imperialistic trend toward considering the globe as destined for a single (usually bourgeois) lifestyle. It confuses the identical symboling mechanism of mankind with our diverse journeys (Burger in press). This "one-world" blandness doctrine has recently reappeared under the name of mundialism, but whether thus or in the format of a single-type Piagetian child, it violates the whole Darwinian finding of micro-fit diversity.

And so when we dare to force so vague a system to testability, it finally may founder. For a single crucially drawn disconfirmation can destroy a paradigm. The Piagetians have been verifying Piagetism within Piagetian assumptions, rather as Isaac Newton's system can still be confirmed within Earthly-proportioned criteria -- but errs when tested under Einsteinian conditions. And interwar Switzerland is unfortunately of narrower scope than the Newtonian globe.

Empiricism as a Delayer of Theory

To date, the master has published some 50 books and 160 articles. Many of them overlap and/or contradict. Virtually none is an authoritative summary. His contribution clearly lies in his detailed reportage. rather than in pure or operationalized theory.

Now, massive detail is not necessarily commendable. Its "natural-history" approach contradicts the scientific demand for parsimony, explaining a phenomenon by ever fewer but more comprehensive factors. As a result, the continuing flood of Piagetan discussion is rehash rather than the breaking of new ground. Thus, a high-prestige journal recently devoted 31 pages to an article on cross-cultural Piagetian research, but it could only conclude, "Effective research into these areas demands more adequately designed research studies. . . . Problems should [instead] deal with significant theoretical issues. . . ." (Ashton 1975: 501-02). Indeed, when paradigm-misfitting facts keep appearing in a

discipline, warned Kuhn (1970:VIII), a broader set of theories, or paradigm, must be sought. A battle is at hand: When "an anomaly comes to seem more than just another puzzle of normal science, the transition to crisis and to extraordinary science has begun."

Just such disharmonies and public dissatisfactions may be peaking in the discipline of education, which is the "engineering" branch of learning-theory (cf. J. Brown 1971:23). And a major or even dominant approach within educational psychology is biogeneticism. Hence it has, we argue, become a dead weight to the development of a cultural theory of learning, a cognitive anthropology.

Individualistic versus Social Sciences, the Forthcoming Battle

We must simultaneously suggest that such empirical patchwork, inferred from a science of one level (viz., zoology), cannot solve the basic problems of a more complex level (viz., of human symbolers, the province of anthropology). And so, to Piaget's approach, one might apply General Omar Bradley's condemnation of "the wrong war, at the wrong place, at the wrong time, and with the wrong enemy." For Piagetism has likewise been draining resources. It has fought the wrong war: internally-induced maturation processes, instead of an evolving interplay between nature and nurture. It fought at the wrong place: Europe, instead of Homo sapiens's diverse climes. And the decalage fought the wrong time: chronological ages instead of ethnic need-times. Further, it fought the wrong enemy: Platonic fixities instead of cultural plasticities.

Its very base is therefore erroneous. Instead of forwarding the discovery of talent maturation, science-history will show, entelechy has retarded it by distracting behavioral science toward the individual's body and away from culture's significant unit, the zeitgeist-specificity of symbols. Piaget has implicitly overemphasized an alleged biologism of learning. That view grossly needs the corrective of an economic /environmental outlook.

May these approaches eventually become mutually reinforcing rather than remain incompatible? Can decalage-psychology be harmonized with anthropology's findings by merely adding a couple of factors somewhere?

Yes, if all of the factors were of equal priority. But, alas, there is directionality in human learning. The same "infantilization" and "fetalization" that enslave the child to the surrounding adults, creates causality from group to individual, not vice versa.

And so there can regrettably be no compromise between individually -based Piagetism and socially based cultural materialism. It is time for enculturative theory to stimulate an Occidental scientific crisis. Indeed, the present article infers far more than a criticism of one particular psychological system. We must question the scientific basis of much of psychology. That concept appropriately derives from the Greek, psyche, 'soul, self.' Beginning with the primacy of the individual, it is ego-science. (From this criticism are somewhat exempted social psychology and its related subdisciplines.)

Now, Piaget has tended to describe himself as an epistemologist. But he has quite correctly also perceived his system as underlying psychology itself: "I cannot prevent myself from feeling a little proud of the master position held by psychology in the system of sciences," he indulged (1967 n.p., quoted in Gardner 1972:1974:237). ". . . . The apprehension of reality is only possible through activities of the organism . . . , and psychology alone permits the study of these activities. . . ."

Of course biogeneticism is not coterminous with all of psychology. Emphasizing or overemphasizing internal motivation as indicated in the earlier Figure 1, Piaget's plan is bipolar to behaviorism, which emphasizes external motivations. Yet the theory and operation of that Skinnerian pole also procrusteanizes human potential, though by the opposite extreme of neglecting the species-specific portions of "mesogenic" interplay. The present author's detailed documentation of its applicatory brevity (Burger 1972a; cf. Burger 1974a) has gone unchallenged. Indeed, even a leading psychologist, Jerome Bruner (1966b:321), has conceded that "psychology is in the main acultural and ahistorical in its theories." Necessarily, not faddishly; for if it were to concenter

itself on symboling, it would have to be founded on ethnicity. And that territory is already claimed by anthropology. The latter is no mere bauble to fill out a three-point graduate-school elective!

By beginning with the individual, psychology must explain (as shown by this article's many biogenetic quotations) that dependent variable in terms of a less dependent, or even independent, variable, namely, his impinging society. This is a fallacy, common yet profound. Indeed, the present author would term psychology's thus -preposterous positioning of the individual with the adjective, "psych-posterous." In contrast, to begin with the human culture and to work toward the individual constitutes anthropology (from anthropos, 'man, human').

Yet evolution clearly shows that the purely biological functions of the organism have gradually become harnessed in the higher animals by the brain's neocortex (e. g., Beck 1971:447-51), and further in humans by the angular gyrus (Geschwind 1972). Therefore a discipline cannot claim simultaneously to predict human behavior and to depriorize symboling /culture. We shall never catch an anthropological fish with a psychological worm.

Indeed, there are resemblances between genetic epistemology and the "biologicizing" of human ethics by an imaginary 'ethical gene' notoriously proposed by the insect-specialist Edward O. Wilson (1975:XXVII). By neglecting the uniqueness of human symboling, much of psychology inherently hypothesizes "biological reductionism" -- the biologism which, as Harris showed (1968:X), snarled the 19th century development of cultural evolution.

Both foci cannot simultaneously be correct. Science-history fairly shouts that progress comes not from perfecting an existing but limited theory, but from its overthrow in favor of a wider-radiused theory (Kuhn 1970:IX). Thus, Earth -centered Ptolemaic astronomy was ultimately defeated, not modified, by the broader arena, Sun-centered Copernicanism.

The astronomical analogy continues relevant: By the year 1500,

Ptolemaism was beyond patchwork. Copernicanism required an entire recasting of the cause-and-effect relationship between our light source and our planet (Armitage 1957:34-37).

But if Ptolemy upstaged the Sun with the Earth, Piaget has upstaged the environment with the individual child -- upstaged the earth with the "son." And via these revelations about both Piagetism and behavioristic psychology, we wish to suggest the unsuitability of much of the individualistic discipline as the basis for human planning, especially cross-culturally. There must be a total recasting of the relationship of individual to group, and of the individualistic disciplines to the cultural discipline. Parts of psychology have, it is true, much to teach anthropology and other fields, such as its methods of interview and of statistics. Hence that discipline must neither persist as is, nor disappear, nor become a subdivision of a social science. Yet it must be radically re-conceptualized to accord with the broader cultural paradigm -- rather as there must be harmony between the theories of today's physics, astronomy, and astrophysics.

Relegating Piagetism from Ethnology to Ethnography

Recapitulation is now in order. We have noted the predominance in current learning-theory of the intellectual-maturation scheme of Jean Piaget. It essentially argues that adolescent intellectual-maturation, or decalage, obeys multiple internally-determined factors, like a multi-stage-rocket. In several articles climaxing here, we have attempted to demonstrate its failure on multiple grounds. First, to the extent that the Genevan's skill-sequence is sound, it is so merely because he has defined stages ever more comprehensively. Hence a later phase could not appear before an earlier one -- by definition (Burger 1977a). "And so Piaget has discovered the dictionary, not adolescence."

Secondly, many of the stages are not, in fact, fully "nested" within later ones. (For example, weight is not entirely a component of volume.) And to the extent of those non-inclusiveness gaps, field reports

reports from diverse cultures disproved this decalage aspect. We mustered almost 150 reports and case histories from over three dozen cultures, marshalling them point-by-point against the over-two-dozen decalage propositions. For each, significant disproof appeared (Burger ms. a). They revealed that the Genevan had erroneously narrowed the universe of human possibilities to a single goal (deduction) and unilinear means human possibilities to a single goal (deduction) and unilinear means (e. g., concrete operations at age 7-1/2). Thererby he denigrated the Darwinian paradigm, that group success follows an adaptation which diversifies with time and place, and that human symboling ultimately facilitates workplace productivity: "Youth learns less from the 'dawning of genes' than from the 'donning of jeans.'"

Therefore the Helvetian's contributions should be narrowed though still remaining highly worthy. One Piagetian benefaction is his convenient subdivision of (Occidental) deduction into its components. Commonly termed the decalage, this is, however, a matter of definition rather than of science. A second lasting contribution will probably be his accurate minuting of middle-class, white, central European youthhood in the first half of the 20th century; this is a superb instance of what anthropologists term ethnography. These contributions were often begun in lonely and unappreciated opposition to the adult-emphasizing intellectual establishment. For these intellectual and moral pioneerings far ahead of other scholars, we gladly homage Piaget, and particularly for his charming sensitivity in reporting those childish surmises.

Yet we must not confuse greatness in definition and in ethnography, which Piaget clearly achieved, with greatness in ethnology. The former two do not depend on the dubiously universal maturation scheme with which the Genevan has erroneously been laureled. His intellectual analysis and synthesis of specific individuals' procedures are quite irrelevant to the sequences in which any real zeitgeist presents tasks. His decalage has failed to reveal the adaptive variety that has become the grandeur of Homo sapiens.

And so the Genevan's triumph is really in its purely descriptive

reportage of a very limited location and time. But the globalism that has been its major boast is mutually exclusive from, not complementary with, the more provable cultural materialism. We gladly recrown Piaget the Humanist and Ethnographer. But we must simultaneously decrown Piaget the Ethnologist and Paradigmatizer. Is his biogenetic scheme really our generation's "greatest intellectual achievement," as asserted by an earlier-quoted scholar? - If so, our generation of behavioral scientists has been facing the diametrically wrong direction. Jean Piaget's concept of an egocentric, multistage "rocket" must now yield to an adolescence theory based on diverse genetic ricochets with multiculture -- on "mesogeny."

NOTES

A very early sketch of the argument of this paper was delivered by the author at the 32nd (1973) annual meeting of the Society for Applied Anthropology, convening in Tucson.

REFERENCES CITED

Armitage, Angus
1957 Copernicus. New York: A. S. Barnes.

Ashton, Patricia T.
1975 Cross-Cultural Piagetian Research. Harvard Educational Review 45:475-506.

Battro, Antonio M.
1966 Dictionnaire d'épistémologie génétique. Trans. from French by Elizabeth Rutschi-Herrmann and Sarah F. Campbell as Piaget: Dictionary of Terms. New York: Pergamon, 1973.

Beck, William S.
1971 Human Design: Molecular, Cellular, and Systematic Physiology. New York: Harcourt Brace Jovanovich.

Blount, Ben G.
1975 Studies in Child Language. American Anthropologist 77:580-600.

Boyle, D. G.
1969 A Students' Guide to Piaget. Oxford: Pergamon.

Brown, Judith K.
1971 The Archaic Illusion. [Summary.] Abstracts, Annual Meeting, American Anthropological Association, 70th:23 only.

Brown, Roland W.
1956 Composition of Scientific Words. Rev. ed. Baltimore: Reese Press. [Distributed by Random House, N. Y.]

Bruner, Jerome S.
1966a and Others. Studies in Cognitive Growth. New York: Wiley.
1966b An Overview. In Bruner and Others 1966a. Pp. 319-26.

Burger, Henry G.

1972a Behavior Modification and Operant Psychology: An Anthropological Critique. American Educational Research Journal 9:343-60.

1974a "Ethniatry": An Anthropological Approach to Ecstasy and Sanity. General Systems 19:59-71.

1974b Critique of Marvin Harris, The Rise of Anthropological Theory (1968). American Anthropologist 76:576-78.

1975 Cultural Materialism: Efficiencies, Not Descriptions. General Systems 20:107-19.

1977a Piaget's Maturational Phases as Merely Consecutive Definitions: The Decalage Reinterpreted as Act-Grades. Communication & Cognition 10:3-31, 37-38.

1977b "Name-Springing": The Need for Neologism. Language Sciences, whole no. 45:21-25.

1977c "Panculture": A Hominization-Derived Processual Taxonomy from Murdock's Universal Basics. In The Concept and Dynamics of Culture. Bernardo Bernardi, ed. World Anthropology [series]. The Hague: Mouton. Pp. 419-74.

ms. a Piaget versus Cultural Materialism: A Concordance of the Discordance. Submitted to ERIC, May 1982.

ms. b The Wordtree*: A Transitive Taxonomy for Solving Problems. Merriam, Kansas: The Wordtree*, in press for early 1983. *Trademark.

Chomsky, Noam

1959 Critique of Burrhus F. Skinner, Verbal Behavior (1957). Language 35:26-58.

Dalton, George

1965 Primitive Money. American Anthropologist 67:44-65.

Downs, Robert B.

1961 Molders of the Modern Mind. New York: Barnes & Noble.

Elkind, David

1969a and John H. Flavell, Eds. Studies in Cognitive Development. New York: Oxford.

1969b and John H. Flavell. Introduction. In Elkind and Flavell 1969a. pp. ix-xix.

Flavell, John H.

1963 The Developmental Psychology of Jean Piaget. With a foreword by Jean Piaget. Princeton, NJ: Van Nostrand.

Gardner, Howard

1972 The Quest for Mind. New York: Vintage, 1974.

Geschwind, Norman

1970 The Organization of Language and the Brain. Science 170:940-44.

1972 Language and the Brain. Scientific American 226(4):76-83.

Ginsburg, Herbert

1969 and Sylvia Opper. Piaget's Theory of Intellectual Development. Englewood Cliffs, NJ: Prentice-Hall.

Gleason, Henry A., Jr.

1961 An Introduction to Descriptive Linguistics. Rev. ed. New York: Holt, Rinehart and Winston.

Greenfield, Patricia M.

1966 and Jerome S. Bruner. Culture and Cognitive Growth. International Journal of Psychology 1:89-107.

Hall, Edward T.

1976 Beyond Culture. Garden City, NY: Anchor Books, 1977.

Hallpike, C. R.

1976 Is There a Primitive Mentality? Man 11:253-70.

Harris, Marvin

1968 The Rise of Anthropological Theory. New York: Crowell.

Henry, Jules

1971 Mental Health Problems in Elementary School. In Essays on Education. [U. S. title: Jules Henry on Education.] Jules Henry, Ed. Harmondsworth, England: Penguin. Pp. 25-42.

Hessen, B.

1931 The Social and Economic Roots of Newton's Principia. In Science at the Crossroads. International Congress of the History of Science & Technology (= International Congress on the History of Sciences). London: Kniga. Pp. 1-62.

Isaacs, Susan

1930 Intellectual Growth in Young Children. New York: Schocken, 1966.

Kuhn, Thomas S.

1970 The Structure of Scientific Revolutions. 2nd Ed. Chicago: University of Chicago Press.

Kummer, Hans

1971 Primate Societies. Chicago: Aldine.

LaBarre, Weston

1954 The Human Animal. Chicago: University of Chicago Press.

Lanham, Richard A.

1968 A Handbook of Rhetorical Terms. Berkeley: University of California Press.

Lehrman, Daniel S.

1953 A Critique of Konrad Lorenz's Theory of Instinctive Behavior. Quarterly Review of Biology 28:337-63.

Lévi-Strauss, Claude

1967 Les Structures Élémentaires de la Parenté. Rev. ed. Trans. from French by J. H. Bell, J. R. vonSterner, and R. Needham as The Elementary Structures of Kinship. Boston: Beacon, 1969.

Maier, Henry W.

1965 Three Theories of Child Development. New York: Harper & Row.

Mead, Margaret

1956 Comments on Professor Piaget's Paper, and [Discussant]. In Tanner and Inhelder 1960:1971. Passim.

Merriam, G. & C. Co., Springfield, MA

1961 Webster's Third New International Dictionary of the English Language, Unabridged. . . . Springfield, MA: G. & C. Merriam Co., 1967.

Northrop, Filmer S. C.

1964 Toward a Deductively Formulated and Operationally Verifiable Comparative Cultural Anthropology. In Cross-Cultural Under-

standing. Filmer S. C. Northrop and Helen H. Livingston, Eds. New York: Harper & Row. Pp. 194-222.

Ogilvy, C. Stanley

1959-60 Higher Mathematics at Lower Levels. Key Reporter 25(2):2 ff.

Petrovsky, A. V.

1972 --- [Article in Sovetskaia Pedagogika]. Trans. from Russian by Arlo Schultz as Basic Directions in the Development and Current State of Educational Psychology. Reprinted in Soviet Education 15(5-6)(1973):92-109.

Piaget, Jean

1947 La Psychologie de l'Intelligence. 2nd French ed. Trans. from French by Malcolm Piercy & D. E. Berlyne as The Psychology of Intelligence. London: Routledge & Kegan Paul, 1950.

1966 Nécessité et Signification des Recherches en Psychologie Génétique [with recapitulation in English]. International Journal of Psychology 1:3-13.

1967 Biology and Knowledge: Biologie et Connaissance. Paris: Gallimard.

1968a L'Épistemologie Génétique. Paris: Presses Universitaires de France, 1970a. Trans. from French by Eleanor Buckworth as Genetic Epistemology. Woodbridge Lectures, 8. New York: Columbia University, 1970b.

1968b Developmental Psychology. International Encyclopedia of the Social Sciences IV:140-47.

Popper, Karl R.

1935 Logik der Forschung. Trans. from German by Karl R. Popper, Julius Freed, and Lan Freed as The Logic of Scientific Discovery. New York: Basic Books, 1959.

Raum, Otto F.

1940 Chaga Childhood. New York: Oxford University Press.

Sigel, Irving E.

1969 The Piagetian System and the World of Education. In Elkind and Flavell 1969a. Pp. 465-90.

Simpson, George Gaylord

1949 The Meaning of Evolution. New Haven: Yale University Press.

Tanner, James M.

1960 and Bärbel Inhelder, Eds. Discussions on Child Development. . . . Fourth meeting, 1956. New York: International Universities Press. Reprinted as volume IV in Tanner and Inhelder 1971.

1971 and Bärbel Inhelder, Eds. [Same.] Geneva, 1953-1956. [Four volumes in one.] New York: International Universities Press.

Turner, Terence

1973 [Critique of] Jean Piaget, Genetic Epistemology (1970) and Le Structuralisme (1968). American Anthropologist 75:351-73.

Waddington, Conrad H.

1957 The Strategy of the Genes. London: Allen and Unwin.

Wilson, Edward O.

1975 Sociobiology. Cambridge, MA: Belknap Press.

[Editor: The proper location for Figure 1 is marked around page 15.]

COURSE FACTORS	TRIGGERING SITE	
	Internal	*External*
Single	Endogeny (cannonball trajectory)	Exogeny (sailboat veering)
Multiple	Entelechy (multistage rocketry)	Mesogeny (therapy itinerary)

Figure 1. Principal conceptual schemes of adolescent development.